

ABSTRACT OF THE DISCLOSURE

A folded core structure is produced by embossing fold lines into a flat planar material web, initiating folds along the fold lines on the upper and lower surfaces of the material web, proceeding
5 with the formation of the folds along the fold lines to deform the material web from its two-dimensional starting configuration to a three-dimensional folded configuration, and post-processing the folded material web to stabilize or fix the folded configuration thereof. A composite structural panel is produced
10 by bonding a cover layer onto at least one surface of the folded core structure. An apparatus preferably includes embossing or creasing rolls to form the fold lines in the material web, air nozzles or folding rolls to initiate the folding process, bristle brush rolls to complete the folding process, and further folding
15 rolls to enhance and fix the folded configuration, optionally in connection with heating, cooling, applying a coating onto, or impregnating a resin or binder into the material web.